



Technical Mapping Advisory Council

Revised (as of July meeting) Draft Minutes
May 31 – June 1, 1998
Atlanta, Georgia

Mark Riebau, presiding, called the meeting to order at 9:13 a.m. Attending all or part of the meeting were:

Members

Mark Riebau, ASCE, Chairman
Michael Buckley, FEMA
Charles Challstrom, NGS/NOAA
Kari Craun, USGS
Kevin Hickey, Fannie Mae
Donald Hull, AASG
Brian Hyde, ASFPM
Michael Moye, NationsBank

Others

Bill DeGroot, Technical Advisor
Ann Flowers, FEMA
John Gambel, FEMA
Kija Kim
Sally Magee, FEMA
Mark Mahoney
Tim McCormick, Dewberry & Davis
Patti McDermott, Consultant
A.J. Meyers, ACSM, Alternate for Wendy Lathrop
Matt Miller, FEMA
Zekrollah Momeini, Dewberry & Davis
Michael Robinson, FEMA
Al Romano, Michael Baker
Paul Rooney, Harvard Design and Mapping
Tom Smith

Members not present were Peggy Bowker, NFDA; Wendy Lathrop, ACSM, who was represented by alternate A.J. Meyers; and Al LeQuang, Freddie Mac.

Revisions to Agenda

The Agenda was revised by acclamation to add two items: (1) action on the Minutes of the April 23 teleconference meeting, and (2) action to reflect the Council's perception of the Modernization Plan.

Action on Minutes of April 12, 1998

Motion was made, seconded, and carried unanimously to approve the Minutes of the April 12, 1998, teleconference meeting as distributed.

Council Activities

Brian Hyde reminded the group of the matrix he had prepared to depict the relationship between and comparison of the Council's goals to a draft of the modernization plan. Four of the twelve goals were flagged as ones that need more attention: Number 3, Evaluate the need for including multiple hazards on NFIP maps; Number 6, Encourage non-federal entities to improve maps; Number 11, Improve activities to educate the public and users of flood maps and communicate with them regarding the use of the data in the NFIP; and Number 12, Improve communication among floodplain managers and others. Mr. Hyde reported his conclusion that the remaining 8 Council goals were addressed in some degree in the modernization plan. The matrix also distinguished among the modernization plan objectives that *can* promote a council goal and those that *may* do so. Overall, Mr. Hyde reported that the modernization plan addressed the Council's objectives "pretty well," but stated that he resists giving the modernization plan full endorsement without a current review of what it does and does not cover. Mr. Hyde then asked for comments. The following were made:

Goal Number 3

- (Kari Craun) There is more detail in the published modernization plan materials than was in the draft against which the Council's goals were originally measured, and a current review is appropriate.
- (Charles Challstrom) The discussion on page 2 of the Council's 1997 Annual Report is relevant.
- (Mike Buckley) FEMA is not in a position to specifically propose including multiple hazards. The objective of the mapping program is to establish standardized base maps in GIS format. These maps will lend themselves to the addition of other themes, such as a variety of hazards.

Q (Mark Riebau): How does the coastal erosion study relate to this issue?

A (Mike Buckley): A coastal erosion study, which also has a riverine erosion component, is being conducted in response to a congressional mandate to map coastal erosion hazards. It involves analysis of economic impacts on the NFIP and the impact of mapping on a community's tax base. The study has been completed and the economic analyses are

beginning. There will be a detailed inventory of structures in the areas mapped. It will not be complete but will include a substantial sample. Data will be collected in the field on those structures, and will be analyzed to determine changes in the risk as the shoreline changes. These data will be evaluated at various points in time and extrapolated to other specific geographic areas and to the nation as a whole. The contractor for the economic analysis is the Heinz Center, established to conduct broad reviews of public policy issues. The Center focuses on environmental and economic issues and brings together representatives from academia, and public and private groups. Mike Grimm is participating in the riverine erosion aspects of the study, and has assembled a team for that purpose. Mr. Buckley reported that he would share information about the study with the Council.

In summary, Mr. Buckley stated that the objective is to develop a product that can be accepted; and that FEMA has addressed Council goal 3.

Mr. Buckley then asked that the new objectives for the modernization plan be distributed (**Appendix 1**). This document reflects all areas being evaluated under the modernization plan and describes each objective. He requested Council members to comment on these objectives. Comments will be forwarded to the manager of the relevant objective. He also stated that FEMA encourages the Council to “be actively involved” as FEMA establishes the framework for moving forward on the modernization plan. Implementation is dependent, of course, on the appropriation of funds. It will cost about \$800 million. The current budget is \$46 million per year and an additional \$800 million will be spent over 7 years. The House Committee on Transportation and Infrastructure held hearings, during which a part of the discussion included the need to do something about mapping and the modernization plan proposal. The Senate will act when the administration takes the initiative after FEMA has submitted a budget plan. The Director has given the green light to meet with OMB, which Mr. Buckley plans to do before the end of June – a time frame in sync with the 2000 budget process.

Goal number 6

Mike Buckley reported that the section of the modernization plan that deals with Goal 6 has gone through a revolution. FEMA has always wanted local communities to be more involved in mapping, particularly in assuming ownership of the maps. The FEMA Director supports this concept and has suggested that the agency contract directly with communities to prepare maps. Funding is being sought that can go to communities and other organizations to conduct studies and prepare maps for FEMA and several local officials have expressed interest in doing so. FEMA has some agreements (e.g., Jefferson Co., KY -- Louisville, etc.) but wants to increase the number substantially next year. It will be in a position to do so by the time funding is available. There will be different levels of participation by communities. Some may even prepare final maps. The first objective is to define the process for agreements.

Mark Riebau reported working with a community in Wisconsin that has an extremely detailed map at a scale of 1" = 500' and has very good topography. This is a good example of a community willing to participate. If every community in the country would do the same, mapping would greatly improve.

Brian Hyde questioned, “When we decided on adopting Goal 6, did we envision something broader in terms of encouraging local units of government to play a larger role in the review and mapping processes? Did we consider that mapping ought not to be construed as a federal responsibility?” Charles Challstrom asked, “Aren’t we looking for better coordination? There is a current FGDC effort to formulate an initiative to coordinate advisors that may be a useful prototype for getting Administration attention.”

(General discussion ensued about working with communities, their ability to influence state activities, evaluation of products – but not drafting -- by TECs, development and application of base map standards, merging census data and GIS information and making them match, and related technical issues.)

Goals 11 and 12

- (Mike Buckley): The modernization plan includes three public awareness objectives. We will have a good, reliable website and an 800 number in place by the end of summer. We are also developing an outreach strategy to make people more aware of what has happened in past floods. We are meeting the public awareness objectives.
- (John Gamble): The new Mitigation Directorate organization also includes an outreach branch that will be headed by Drew Sachs.
- Brian Hyde reported on a Special Report published by the St. Louis (MO) Post Dispatch on November 21, 1993, titled “Disaster Before the Flood.” The Chairman directed that the recording secretary obtain a copy and distribute it to the Council. Mr. Hyde also mentioned a helpful article that appeared on an unknown date in the Sacramento (CA) Bee.
- Mike Moyer reported an interest in finding a way to include courses on disasters and mitigation in elementary and other public schools. There is a need to create curriculum materials for children who will then grow up with supportive values. FEMA, Mr. Moyer added, also can help with coordination among organizations that communicate with FEMA. More discussion is needed among those organizations. Someone has to take the initiative to make it happen. The number of listings in the Directory published by the National Hazards Research Center in Boulder, for example, suggests the need for interaction. Mr. Moyer also reported that the “find” utility on most web browsers would produce the Directory on a search for “natural hazards.”
- Mike Buckley agreed to send the names and addresses of Council members to the Boulder organization for inclusion in the Directory, and Mark Riebau agreed to send the URL to Mike Buckley.

Discussion about the goals concluded with agreement by acclamation that FEMA has addressed each of the Council’s goals.

FEMA Status Report

Letter from ACSM

Mark Riebau distributed a letter from ACSM, dated May 26, 1996, from James Boyer, President, to FEMA Director James Lee Witt expressing support for the modernization plan. The Chairman directed that it be included as an attachment to these minutes (**Attachment 1**).

NAFSMA

The Chairman also distributed a letter to Director Witt from the President of the National Association of Flood and Stormwater Management supporting the modernization plan, and directed that it be attached to these minutes (**Attachment 2**).

Mike Buckley noted that these types of letters are extremely important, and that one will be forthcoming from the Western Governors' Association. He encouraged representatives of other organizations to follow suit, and reported that support letters will be posted on the FEMA.GOV website. Mid-summer is the ideal time for such letters to be issued.

Brian Hyde reported that he has discussed support of the modernization plan with the outgoing Vice Chair of ASFPM. Its Board is expected to endorse the modernization plan as well. Mr. Hyde added that Matt Miller had clarified a number of issues and that he believes FEMA will work with the Council to a greater degree that it has done with similar organizations in the past. Some FEMA employees, he added, are pleased at the increased level of community input.

The Chairman reported that he had discussed a letter of support from NFDA with Peggy Bowker on May 30, and is expecting it to be prepared.

The Chair directed that the recording secretary contact Wendy Lathrop for a clearer copy of the ACSM letter before attaching it to these minutes.

After further discussion about Council support of the modernization plan, the Chairman called for a motion.

Motion:

Don Hull moved that the Council go on record as supporting the FEMA map modernization plan, and write to Director Witt indicating that support. Brian Hyde seconded the motion.

Discussion:

Brian Hyde offered a substitute motion: that the Council go on record as supporting the FEMA map modernization plan *subject to the participation of ASFPM in the development and implementation of the modernization plan; further, that the letter of support follow the same*

form as that of the ACSM, with appropriate language substitutions. No second was heard to the substitute motion.

Discussion on the motion continued, and ideas for language in the letter of support were offered. Mr. Challstrom reminded the Council of previous action on this issue. Mr. Hull responded that the Council, when it acted previously, supported the planning concept for the modernization plan. He now would like the Council to go beyond that and support the modernization plan itself. Mr. Moyer added that it remains appropriate for the group to include language to indicate an interest in continuing input to implementation of the plan. The Chairman asked the group to draft a letter to Director Witt before adjourning.

The maker of the motion on the floor, Mr. Hull, withdrew his motion, and the withdrawal was accepted by the second. He then offered an amended motion, as follows:

Amended Motion

That the Council strongly support modernizing FEMA's Flood Hazard Mapping Program, as described in the progress report dated November 1997, and offer its continued involvement and advice in implementing the program.

The amended motion was seconded, and carried unanimously.

The Council agreed by acclamation to send a letter to the Director of FEMA reporting the resolution to him, and to draft the letter later in the day.

Information requested from FEMA

Mike Buckley distributed copies of letters to Mark Riebau:

1. dated April 3, 1998, from Mike Armstrong, commenting on the Recommendations and Future Directions sections of the Council's annual report (**Attachment 3**), attaching formerly embargoed budget information and other documentation; and
2. dated April 22, from Mike Buckley responding to issues raised at the March meeting in Baltimore (**Attachment 4**).

During discussion on the April 3 letter, support was heard for institutionalizing the decision points during the process of map creation/revision, and concerns about "buy-in" from regional staff. Mike Buckley pointed out that regions, for the most part, support multi-year contracts and involving the TECs "up front." In any case, FEMA is going to follow through with a requirement. Mark Riebau pointed out that the steps outlined may shorten the time frame for map production, but will not necessarily reduce costs because communication itself is expensive. The important point is that the products will be improved. Brian Hyde added that increased coordination could also result in some offsetting savings.

With regard to base maps, Mike Buckley stated that new technology (he is learning about LIDAR) is making it possible to obtain detailed topographic information cost-effectively and

with great precision by methods other than aerial photos. LIDAR imaging is capable of picking up information with a vertical accuracy of 15 centimeters (6 inches), which is far superior to most aerial photographic compilations. It will make map production less costly. There is an initiative to develop digital elevation models – countywide topographic models -- that can be sold to customers. The first one will be produced in Texas (the county that includes Houston), where there are significant subsidence problems. Al Romano added that the models also are being tested in an area of California.

Discussion followed in which Council members shared information about new technology and methodologies to determine flood elevations automatically. Discussion covered reducing costs of imaging, improving benchmarking systems, new terminology that will more precisely reflect the position of property *vis-B-vis* the floodplain other than the current designations as “in” or “out,” and improved understanding by homeowners of their risk of flooding.

Continuing discussion focused on base mapping partnerships, particularly the need for USGS to have additional funding, the use by FEMA of digital orthophoto quarter quads as the default base map standard (although continuing to consider other base map standards), scale of base maps, the need to develop a commonly understood lexicon around maps and mapping processes, and the need for agreement among the mapping community about what will be included on a base map and a work map.

The Chairman led discussion about groups, such as the leadership of the flood conference and segments of the insurance community, that could provide support for FEMA’s modernization program. He sought and received suggestions from the group.

Discussion concluded on the subject of coverage for mapping on the agendas of the annual flood conferences.

Old Business

- *Digital firms.* Mike Buckley announced that a prototype methodology – SmartFIRM – for producing digital maps would be demonstrated on Tuesday at the flood conference. Mark Riebau reiterated the Council’s support for distribution of all maps in digital format, and wholesale conversion of existing maps, as provided for in the modernization plan. Mike Buckley commented that FEMA cannot eliminate paper maps altogether for some time to come but does want to work toward consistency.
- *Map Service Center RFP.* Kari Craun asked whether the RFP had been issued. Mike Buckley responded that Kathy Miller would send the RFP to the recording secretary, who will distribute it to the Council.
- *Community Involvement in Mapping.* Mark Riebau noted that the response from FEMA to the Council’s interest in supporting community involvement in mapping adequately addresses the issue.
- *Bill Barr Complaint.* The Chairman reported that Mr. Barr’s issue has been successfully resolved, and that he has received a refund.

- *Elevation Certification.* John Gambel reported that the elevation certificate would go out to the Task Force this week. The Chairman reiterated the Council's concern about the length of the review period.
- *Mapping effective versus future conditions flooding.* Future conditions flooding will be discussed at the flood conference on Tuesday. The Chairman requested, therefore, that Council decisions on the subject be postponed until its next face-to-face meeting. Mike Buckley reported that Sally Magee is assigned to work on this very tough issue. Brian Hyde raised the question of how the Council should interact with the Office of General Counsel, who has issued an opinion on the subject. Mike Buckley responded that he had informed an OGC deputy that the subject would be revisited, written issues are being prepared, and a formal request for an opinion will be forthcoming. The Chairman asked the group to consider making a formal recommendation on the subject at its next face-to-face meeting.
- *Quick-2 model.* Mark Riebau reported that Wendy Lathrop had asked for a copy of the Quick-2 software, and spent some time experimenting with it. She then sent an e-mail saying that she didn't know enough about how to determine flood elevations to judge whether the answers she got were real or not. The report generated discussion about Quick-2, in which these opinions were expressed: (1) it should be withdrawn from distribution; (2) the publication and promotional materials should be revised to eliminate the suggestion that just anyone using the software can determine a flood elevation; (3) it is a useful tool for engineers who are also developers; (4) it is intended for public officials to help guide them through the process of developing a BFE; (5) it is a hydraulic tool (countered by "anyone trained in hydraulic models wouldn't use Quick-2"); (6) the model isn't the problem; how it is being used is the problem; and (7) any tool can be misused.

New Business

1. Date for the Next Face to Face Meeting

The Council agreed by acclamation to change its next face to face meeting from the scheduled September date to August 17-18, 1998. USGS is hosting this meeting. The FEMA contractor will find accommodations in the Reston, Virginia, area.

2. Teleconference Meeting

The next meeting of the Council is scheduled on Thursday, July 16, by teleconference. The Chairman noted that the agenda will include action on the minutes of this meeting and finalizing the agenda for the August meeting, and asked for other additions. Suggestions made included:

- Make assignments for the August meeting. For example, the Council needs to look at issues for the annual report, and those responsible for writing or contributing to sections of the report will need to bring their ideas to Reston for review by the entire group. This will resolve issues such as Peggy Bowker's concern that some issues may not be appropriate for Council consideration under its charter.
- Discussion of and, perhaps, action on the elevation certificate. John Gambel agreed to contact the Council to advise them whether the comment period is extended.

3. Agenda for the August 17-18, 1998, meeting

The Agenda will include:

- a. Presentation of information about digital orthophotoquads by Kari Craun (Cartography 101)
- b. Presentation from FGDC on Standards (Matt Miller to arrange)
- c. Discussion of priorities for the modernization plan
- d. Discussion of elevation certificate
- e. Discussion of future conditions hydrology: recommendation regarding base maps
- f. Discussion of 1998 Annual report

4. Format and Outline of the 1998 Annual Report

The Chairman called for discussion on how to facilitate the preparation of the 1998 annual report. Mike Moye suggested that the format for the last report was effective and could be used again. Using the same format would greatly reduce the time required for the 1998 report. Further, items in the "Future Directions" section could simply be moved to an appropriate section as they are accomplished. Mr. Challstrom added that each report should stand alone, even if it is necessary to repeat background information.

At the conclusion of discussion, the Council had agreed that the 1998 Annual Report (1) use the same outline as was used in the 1997 report; and (2) Council goals will be reviewed to determine concordance with the modernization plan (Peggy Bowker previously volunteered to prepare this section).

The group reopened discussion of the Council's goals, and debated at length the need to revise the goals. Discussion concluded with no consensus.

5. Letters of Map Amendment

Bill DeGroot shared an example of a LOMA problem (see correspondence with Kevin Wegener, **Attachment 5**). Mark Riebau then demonstrated, using copies of former and revised Chippewa County floodplain maps, the difficulty of determining whether a piece of property is or is not in the floodplain. The purpose of the demonstration was to support attaching LOMAs to deeds and ensuring that they appear in title searches. Mr. Challstrom pointed out that the Council had made a recommendation in March that FEMA convene a workshop to develop recommendations for moving forward with a pilot program to involve local, state, and regional agencies in administering LOMAs in certain areas. The Chairman questioned whether progress had been made on the workshop, and John Gambel responded that it would be done. Brian Hyde added that the subcommittee on LOMAs and LOMRs should be in touch with John Gambel, who will be responsible for the workshop. (Also see Minutes, Technical Mapping Advisory Council, March 2-3, 1998, p. 14).

6. Issue for Future Consideration

The Chairman noted an apparent trend toward more damaging floods than had been expected, and suggested that the Council continue to work on this issue. Mike Buckley added that freeboard requirements are a part of the issue. The need for freeboard varies widely from place to place, he continued, so it does not make sense to establish a national freeboard requirement. Brian Hyde pointed out that recommendations on pages 21-23 and 31 of the 1997 annual report address the issue, and encouraged that the workshop on LOMAs deal further with it. John Gambel stated that he would keep the Council advised as plans for the workshop are developed.

Mark Riebau reported that Ed Pasterick would identify a representative from the insurance industry to participate in Council meetings, beginning with the conference call in July.

7. Discussion of Base Maps

Brian Hyde presented three versions of floodplain mapping for a town of 800-1000 people, Calhan, about 30 miles from Colorado Springs and compared those three versions to each other. The first version was an approximate floodplain map prepared by FIA with separate, relatively narrow floodplains. The second version was another approximate map prepared by FIA with a single, much wider floodplain that included previously "dry" areas between the original narrow floodplains into one large floodprone area. The second version also left out some floodprone areas shown on the first version. Mr. Hyde's state agency, the Colorado Water Conservation Board, the state NFIP coordinating agency, had no documentation and neither did the Town of Calhan, to support these changes. Issuance of this second version of floodplain mapping caused difficulties locally because of some problems with accurately representing locations of streets and corporate limits. A local developer was concerned about the inclusion of his entire development in the floodplain without any engineering backup information to support that inclusion. Faced with this mapping problem, the town, the developer and the State of Colorado requested and were able to get technical assistance from the Natural Resources Conservation Service (NRCS) in the form of a detailed study of Calhan's floodplains. That study was completed in 1995. Mr. Hyde prepared a single map that showed the two FIA versions of floodplain mapping and the more recent NRCS version. The NRCS mapping was actually rather similar to the first FIA approximate delineation and very different from the second FIA delineation.

The state and the town submitted the NRCS mapping to FEMA for a revision of the town's "official" mapping. FEMA recently prepared a draft map as part of the digital Flood Insurance Study for unincorporated El Paso County and the municipalities in El Paso County (including Calhan). Mr. Hyde presented the new draft FEMA map, derived from the NRCS study, to the Council for comparison to the other floodplain mapping for Calhan. Although the floodplain delineation in the draft FEMA mapping is appropriate, Mr. Hyde identified two problems with the mapping. The problems are (1) the street pattern used by Baker Engineers came from the previous FIA maps instead of coming from the NRCS mapping, so some streets are missing (including the streets in the previously-mentioned developer's subdivision) or in the wrong locations; and (2) Calhan's corporate limits are not shown correctly. Mr. Hyde presented this demonstration to outline, from the perspective of a small community, the technical and

procedural difficulties that can arise in correcting and updating floodplain maps. He also hoped the Council would make suggestions as to future improvements in the map correction/revision process.

In discussion, the following colloquy was heard:

(Mark Riebau) Is it safe to assume that if the hydraulics and hydrology had been submitted electronically a better new map would have been produced?

(Mike Buckley) It would depend on the format of the map and some other issues.

(Kari Craun) Do you have a recommended format in which data should be submitted?

(Mike Buckley) No. We deal with a number of different formats. . . .

(Bill DeGroot) Couldn't there be a note included to the effect that "the local government may have more local information?"

Lengthy discussion followed about sources of information about floodplains, and the need for FEMA to match maps together and bundle them. Suggestion was made, regarding the Colorado example, that the NRCS study be referenced on the face of the FIRM. Brian Hyde also reported that a different Colorado community has no FIRM, but does have 12 watershed studies that could be consolidated to help format a FIRM.

Presentations

The Chairman then asked the group to review computerized presentations prepared by Kari Craun and Tim McCormick. Mr. McCormick demonstrated a D-FIRM 2.1 strawman that illustrated the capabilities of the D-FIRM 2.1 product. This product enables the integration of engineering data with mapping information. D-FIRM 2.1 will become the "switchboard" that holds all the map information used by local officials and others. Eventually, D-FIRMs will be available via the Internet.

Kari Craun gave a demonstration of U.S. Geological Survey digital mapping products, including digital elevation models, digital raster graphics, digital line graphs, and digital orthophotoquads. The purpose of the demonstration was to enable the Council to visualize these products and the differences in the data produced at different resolutions and scales.

Discussion of Letter to FEMA Director

The Council discussed at length the concepts that should be embodied in the letter to Director Witt to advise him that the Council supports the modernization plan. At the conclusion of discussion, Council members drafted the following, subject to overnight review and revision.

The Honorable James Lee Witt
Director
Federal Emergency Management Agency
500 C Street, S.W.
Washington, DC 20472

Dear Director Witt:

The Technical Mapping Advisory Council, at its meeting on May 31, 1998, passed the following Resolution:

RESOLVED, that the Council strongly supports modernizing FEMA's Flood Hazard Mapping Program, as described in the Progress Report dated November 1997, and offers its continued involvement and advice in implementing the program.

The Council, created by Congress under the National Flood Insurance Reform Act of 1994, represents engineers, surveyors, state government officials, lenders, Fannie Mae, Freddie Mac, Federal government officials, and others.

The Council acknowledges FEMA's rapid response to concerns expressed by the Council in its 1996 and 1997 annual reports. Only 19 months after the Council's first meeting, FEMA's Technical Services Division, Mitigation Directorate, responded to Council recommendations with the publication of the Progress Report, which describes how FEMA proposes to improve floodplain maps and mapping processes.

The benefits of implementing the modernization plan will accrue to citizens of the United States. Implementation will result in improved public safety and welfare. Better flood data and mapping also can assist states and communities in taking preventive actions, such as improving floodplain management, land-use planning, and building design, as well as in planning for pre-disaster mitigation, emergency response, and disaster recovery. The Cooperating Technical Community initiative described in the plan complements Project Impact and is representative of the new, forward-looking trend at all levels of government to work in partnership and to involve citizens appropriately in assuming responsibility for reducing risk in American communities.

The Council looks forward to continued involvement in the modernization program as implementation proceeds, and appreciates the opportunity you have given it to do so.

Sincerely yours,

Mark Riebau
Chairman

Recess

The Chairman advised that his schedule required him to return home at the close of the day, and, hearing no further business, declared the meeting in recess on May 31, 1998, at 6:18 p.m.

June 1, 1998

The meeting reconvened at 1:14 p.m., June 1, 1998, with Vice Chairman Mike Buckley presiding.

John Gambel announced that the elevation certification will go out this week, and that the time period for review has been extended to the original period of 45 days.

Mike Buckley requested members of the Council to provide additional comments, if any, on the letter to Director Witt to the recording secretary by the end of the meeting, and expressed appreciation to members for reaching consensus on this issue.

Future Conditions Hydrology, Sally Magee

Sally Magee reported on the status of FEMA's consideration of future conditions hydrology in the context of the modernization program. The outline of her presentation follows.

- Technical Services Division Objective: Develop standards and procedures for mapping future conditions hydrology.
- Background.
 - Flood hazard mapping has historically been based on existing conditions of the watershed
 - Areas that experience physical change are the most significant when the age of maps is considered
 - FEMA is considering mapping flood hazards that are based on future hydrologic conditions of the watershed.
- Options for using future conditions hydrology
 - Produced by the community
 - Produced by FEMA
 - For regulatory and insurance purposes
 - For informational or advisory purposes
- Key Issues
 - Technical
 - Procedural
 - Political
- Technical issues

- A clear definition of “future” needs to be established
- Acceptable engineering methodologies and guidelines will have to be determined for use by communities and study contractors.
- Procedural issues
 - How the future conditions floodplain will be shown on FIRMs
 - Mapping specifications for both paper and digital products
 - NFIP regulations may have to be updated to include future conditions hydrology for mapping/regulatory/informational purposes
 - Flood insurance policy requirements for structures within the future conditions floodplain, but outside the existing conditions floodplain
 - LOMC processing for communities that display future conditions floodplains
 - Updating FEMA 37, Guidelines and Specifications for Study Contractors
 - Cost implications of initial production and map maintenance for FEMA and communities
- Political issues
 - All communities may not want floodplain mapping based on future conditions hydrology
 - Citizens may object to land-use regulations based on conditions that do not currently exist
- Objective Managers
 - Michael Grimm, Floodplain Engineer (Manager)
 - Sally Magee, Water Resources Engineer (Assistant Manager)

Discussion on the Future Conditions Hydrology presentation

John Gambel noted that, because this is a broad issue having numerous components, it is important that a cross section of expertise be brought together to address it. The Mitigation Directorate will obtain input from representatives of affected constituencies.

Matt Miller, Mike Buckley, and Bill DeGroot engaged in discussion about Mr. DeGroot’s experience with mapping to future conditions. At the last meeting (in Baltimore), Brian Hyde and Peggy Bowker presented information on hydrology. Matt Miller pointed out the wide variation in results when different groups attempt to map an agreed-upon condition. The complexity introduced by future conditions hydrology compounds the potential for variance, and he questioned how the variance can be reduced. Mr. DeGroot noted that his community, for 25 years, has based the future conditions on the best estimate each local jurisdiction in the watershed could give. The community reviews the estimates every five years, and has not yet overestimated development in a basin.

Mike Buckley pointed out that one difficulty is in the pricing of flood insurance. The current pricing structure does not recognize the risk associated with the future BFE. Regulations also are based on current conditions, and some regulatory accommodation would have to be found.

FEMA, in the mid-1980s, explored using CRS as a vehicle for making adjustments in premiums. He asked the Council to comment on whether CRS could now be a viable mechanism to deal with that particular issue.

Discussion ensued, during which numerous equity issues about community options and how they would be priced were raised. The requirement under Executive Order 1198 for the 500-year floodplain was questioned, as was the potential need for three-dimensional digital maps to reflect both current flood hazards and future conditions. The complications of considering the future effects of floodplain management and other mitigation on the natural floodplain were introduced and discussed. The last major discussion points were (1) the willingness of the community itself to use such maps, and (2) jurisdictional issues that might arise if a community chose to map to future conditions and an adjacent county in the same watershed chose not to do so; and (3) that FEMA is under legal requirements to price insurance based on current conditions, but would need to regulate based on future conditions in communities that choose to map them. Discussion concluded with anecdotal reports from several council members.

Sally Magee offered that a work group might need to be organized to review the issues in more depth.

The Acting Chairman then asked the group whether anyone was opposed to recommending that consideration of mapping to future conditions be a part of the modernization program, acknowledging that relevant issues must be resolved before such a program is actually instituted. Specifically, he asked whether the Council would like to consider making such a recommendation in the 1998 annual Report. Responses included:

- Future conditions mapping is only practical in a digital environment, although experience could be gained if an opportunity presented itself before a fully digital environment becomes reality.
- If a community wants to do it, the option should be included in the products available and distributed through FEMA.
- There are advantages to future conditions mapping. Communities that do it would like some support and credit and help in continuing rather than having to use FEMA maps with a lower standard, which creates problems for them. The CRS and CTC and Project Impact communities at least should have the option to do it.
- Perhaps in the new mapping specifications that have various hazard layers, future conditions could be one of the layers.

Brian Hyde raised the question, would communities having a paper FIRM evolve into the digital environment by digitizing their information? Mike Buckley responded that, even though paper FIRMs would present some problems, digitizing them would introduce the community to the digital environment. Further, FEMA may possibly be in a position to fund some of that capability from money set aside to develop products in support of the flood insurance program.

Mike Buckley asked for a volunteer to draft a recommendation to be discussed at the next meeting. After final discussion, he directed that Sally Magee prepare a recommendation for the

Council's consideration, and asked the recording secretary to include it in the Agenda for the July conference call.

The subject of dam-break flooding was raised, and Mike Buckley reported that dam-break inundation is one of the multi-hazard occurrences that can be layered into the digital mapping system. Matt Miller added that FEMA's dam safety program is increasing in importance because of the aging of many dams. The agency's role is to provide training to the states so they will be able to manage their risk to dam failure.

Presentation on Hydraulics, *Tom Smith*

The outline of Mr. Smith's presentation on riverine hydraulics is attached to these minutes (**Attachment 6**). A technical discussion ensued, in which the major point of interest to the Council was the use of the Hydrologic Engineering Center-River Analysis System (HEC-RAS or just "RAS") for updating a stream or long reaches of a stream. Don Hull asked whether a recommendation from the Council were needed. Matt Miller responded that the FEMA Director could make a decision to institutionalize the best procedures, and the next step would be for FEMA to establish applicable protocols.

Discussion of additional aspects of riverine hydraulics was opened by Matt Miller, asking the question, "What happens if a hydraulic structure (e.g., a bridge) doesn't remain unobstructed – for example if an automobile or a mobile home plugs the opening in the bridge?" In its studies, he continued, FEMA assumes that hydraulic structures remain unobstructed because obstructions can't be predicted. Brian Hyde added that he did not see an unobstructed hydraulic structure in the recently flooded area of Colorado, and asked Mr. Smith, "If you were advising this Council on issues for making maps better, what points would you like to make?" Mr. Smith replied that (1) obstructions to the flow of water at bridges occur frequently during flooding and should be considered; and (2) the construction of levees in front of a flood will not eliminate the A-zone behind it. Sooner or later, any levee will be overtopped. (3) dam inundation and the condition of dams are problems not well understood by the average homeowner.

Matt Miller commented, referring back to the hydraulic structures, that "we assume that hydraulic structures do not fail. In most cases that is not true but it is difficult to predict blockage. That tends to make the BFE low. Culverts fail readily with stop signs or cows. If we could predict blockage it could be incorporated into models but [current] analyses tend to be low." He suggested that FEMA, through rulemaking, establish reasonable assumptions for blockage. Al Romano added that in some instances, the channel could be redefined. In Western areas are a number of undefined and migrating channels and other issues in nature that complicate prediction of flooding levels. From a hydraulic standpoint, it is also necessary to recognize that what works in one stream may not work in another. If the Council wants to address these issues in detail, it also needs to look at subsidence issues and groundwater. These are important from a hydraulics standpoint. Mike Buckley noted the difficulties of making assumptions about blockage patterns cause by occurrences such as ice jams. Mr. Smith reported that the Corps of Engineers has done some studies on that point, on the basis that a decision has to be made about what is reasonable under what conditions.

Coastal Engineering and NFIP Mapping, *Zekrollah Momeini*

Zekrollah Momeini then briefed the group on coastal engineering and mapping in the National Flood Insurance Program. He presented an overview of coastal hazards, and information on engineering and mapping of coastal flood zones.

Lengthy discussion followed, covering subjects from damage in A-zones adjacent to V-zones, to preliminary results of a study of wave dynamics, and the hotly contested debate over whether the shoreline retreat should be considered in mapping coastal zones. Other discussion revolved around difficulties, particularly in back bay areas, in trying to calculate how waves will propagate when hurricane winds come from all directions and can even rotate 180 degrees. When there is a lower elevation on a bay than on the coast, determining the most likely wind direction is important. In some instances FEMA does not have enough information to show the V-zones behind these areas, so the practice is to have something technically defensible, or not to include them at all. High-water marks are recorded, the storm is modeled and calibrated, and then verified. Calibration is not done after the storm by FEMA. The Weather Service generally records the range of storm surge elevations at the peak and as it tails off. Weather Service data provide information, but FEMA has not been in a position to apply it in the agency's models. Another aspect is that the hurricane center uses a different model, and classifies by category of storm. A category 3 or higher is likely to produce some 100-year surges. The center uses the SLOSH model, which is similar to the FEMA model but not close enough to be compatible. When FEMA decided to go with Petrotech, the SLOSH model was considered but it had several deficiencies (it was not well documented, not generally available, and could not produce studies at the rate at which FEMA wanted them produced).

Mike Buckley continued that FEMA models tsunamis in Northern California, Oregon, Washington, Alaska, and the Hawaiian Islands. Because of the reminder of Hurricane Iniki, FEMA has also looked more seriously at hurricanes in Hawaii. The difference in flood risks between coastal and riverine areas is an issue the Council may want to review. Mr. Buckley will articulate and include them on the agenda of a future meeting to see if the Council wants to formulate recommendations. If briefings are needed, FEMA will provide for them because coastal flooding is a significant issue in the flood program. Mr. Challstrom noted that he oversees a coastal mapping program for the purpose of delineating coastline, and asked whether the data it produces are available enough to FEMA. Mike Buckley responded that a routine program to fly the coast annually with LIDAR has been proposed to monitor changes and is probably feasible. FEMA could partner in this activity with NOAA, NGS, the Hurricane Center, and perhaps USGS. Brian Hyde questioned the need for involvement of the Council in this issue, and Don Hull pointed out that much more important changes in the coastline are caused by geologic events – earthquakes, landslides, and subsidence.

Discussion about the dynamics of coastal changes continued and Council members shared anecdotes about retreating coastline. The continuing issue of runup in areas where large dunes are located also was presented.

Adjournment

Both Mike Buckley and Matt Miller expressed appreciation to the Council for the support of the modernization plan, and a desire that the Council continue to participate with FEMA as it is implemented. Council members were asked to contact the objective manager and volunteer to serve on a work group, or risk being appointed to do so.

Members also expressed appreciation to those who made presentations.

Hearing no further business, Mike Buckley declared the meeting adjourned at 4:10 p.m. on June 1, 1998.

Items Distributed

Beyke, John C., President, National Association of Flood and Stormwater Management Agencies. Letter to Hon. James Lee Witt, May 19, 1998.

Technical Mapping Advisory Council. Minutes (draft), Teleconference Meeting, Thursday, April 23, 1998.

_____. Minutes, March 2-3, 1998.

Armstrong, Michael J., Associate Director for Mitigation. Letter to Mr. Mark Riebau, April 3, 1998.

Buckley, Michael K., Director, Technical Services Division. Letter to Mr. Mark Riebau, April 22, 1998.

FEMA, Mitigation Directorate. “Modernizing FEMA’s Flood Hazard Mapping Program: Technical Services Division FY 1998 Objectives” (draft), May 28, 1998.

Michael Baker Corp., “Hydraulics (Riverine),” n.d. (overhead presentation).

FEMA. “Modernizing FEMA’s Flood Hazard Maps,” n.d. (overhead presentation).

Boyer, James F., President, American Congress on Surveying and Mapping. Letter to James Lee Witt, May 26, 1998.